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| 09/816,941      | 03/23/2001  | Stephen Christopher Kitson | 30001065            | 6953             |

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EXAMINER

DUONG, THOI V

ART UNIT PAPER NUMBER

2871

DATE MAILED: 02/21/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/816,941

Applicant(s)

KITSON ET AL.

Examiner

Thoi V. Duong

Art Unit

2871

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 03 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 25 November 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-7,9,11-20 and 22-48 ~~is/are~~ pending in the application.
- 4a) Of the above claim(s) 12-20,22,23 and 30-33 ~~is/are~~ withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7,9,11,24-29 and 34-48 ~~is/are~~ rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- ☒ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>112505</u> . | 6) <input type="checkbox"/> Other: _____  |

### **DETAILED ACTION**

1. This office action is in response to the Amendment filed November 25, 2005.

Accordingly, claims 1, 11, 34 and 48 were amended, and claims 8, 10 and 21 were cancelled. Currently, claims 1-7, 9, 11-20 and 22-48 are pending in this application; of these claims, claims 12-20, 22, 23 and 30-33 were withdrawn from consideration and claims 1-7, 9, 11, 24-29 and 34-48 are considered in this office action.

### ***Claim Objections***

2. Claim 11 is objected to because of the following informalities: claim 11 recites the limitation "said liquid crystal director" in line 3. There is insufficient antecedent basis for this limitation in the claim. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000.

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Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

4. Claims 1-4, 9, 11, 24, 28, 29, 34-36, 39, 41, 42 and 46-48 are rejected under 35 U.S.C. 102(e) as being anticipated by Yamada et al. (Yamada, USPN 6,327,016 B1).

Re claims 1 and 11, as shown in Fig. 3, Yamada discloses a liquid crystal device comprising:

a first cell wall 10 and a second cell wall 20 enclosing a layer of liquid crystal material 40;

electrodes (not shown) for applying an electric field across at least some of said liquid crystal material (col. 6, lines 34-39 and col. 9, lines 54-62); and

a surface alignment structure 11 on the inner surface of at least said first cell wall 10 providing a single desired uniform alignment to a liquid crystal director over a side wall 11a of the structure (col. 6, lines 18-58),

wherein said surface alignment structure 11 comprises a two dimensional array of alignment posts which are formed from a material selected from a photoresist material, and which are shaped and oriented to produce the desired alignment (col. 9, lines 37-53 and col. 10, lines 12-23).

Re claims 2 and 3, said posts 11 have a height in the range of about 0.3 to 2 micrometer (col. 9, lines 64-66).

Re claim 4, at least part of a side wall of said posts is tilted with respect to the normal to the plane of the first cell wall (col. 9, lines 37-45).

Re claim 9, said posts 11 are different shape in different regions of the device as shown in Figs. 8A and 8B.

Re claim 24, said alignment posts have a square cross section as shown in Fig. 7B.

Re claim 28, said liquid crystal material is a nematic liquid crystal (col. 1, lines 14-19 and col. 10, lines 46-48).

Re claim 29, the device of Yamada further comprises one or more spacer posts 11, said one or more spacer posts spanning the entire cell (col. 9, lines 22-35).

Re claim 34, as shown in Fig. 3, Yamada discloses a liquid crystal device comprising:

- a first cell wall 10 and a second cell wall 20 enclosing a layer of liquid crystal material 40;

- electrodes (not shown) for applying an electric field across at least some of said liquid crystal material (col. 6, lines 34-39 and col. 9, lines 54-62); and

- a surface alignment structure 11 on the inner surface of at least said first cell wall 10 providing a single desired uniform alignment to a liquid crystal director over a side wall 11a of the structure (col. 6, lines 18-58),

- wherein said surface alignment structure 11 comprises a two dimensional array of alignment posts which are shaped and oriented to produce the desired alignment, and which have a height in the range of about 0.5 to 5 micrometer (col. 9, lines 37-66).

Re claim 35, said posts 11 have a height in the range of about 1.0 to 1,2 micrometer (col. 9, lines 64-66).

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Re claim 36, at least part of a side wall of said posts is tilted with respect to the normal to the plane of the first cell wall (col. 9, lines 37-45).

Re claim 39, said posts are formed from a photoresist material (col. 10, lines 12-23).

Re claim 41, said posts 11 are different shape in different regions of the device as shown in Figs. 8A and 8B.

Re claim 42, said alignment posts 11 have a square cross section as shown in Fig. 7B.

Re claim 46, said liquid crystal material is a nematic liquid crystal (col. 1, lines 14-19 and col. 10, lines 46-48).

Re claim 47, the device of Yamada further comprises one or more spacer posts 11, said one or more spacer posts spanning the entire cell (col. 9, lines 22-35).

Re claim 48, as shown in Fig. 3, Yamada discloses a liquid crystal device comprising:

a first cell wall 10 and a second cell wall 20 enclosing a layer of liquid crystal material 40;

electrodes (not shown) for applying an electric field across at least some of said liquid crystal material (col. 6, lines 34-39 and col. 9, lines 54-62); and

a surface alignment structure 11 on the inner surface of at least said first cell wall 10 providing a single desired uniform alignment to a liquid crystal director over a side wall 11a of the structure (col. 6, lines 18-58),

wherein said surface alignment structure 11 comprises a two dimensional array of alignment posts which are shaped and oriented to produce the desired alignment, which have a height in the range of about 0.5 to 5 micrometer (col. 9, lines 37-66), and which are formed from a photoresist material (col. 10, lines 12-23).

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 7 and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamada et al. (Yamada, USPN 6,327,016 B1) in view of JP 5-249463 (JP'463).

Yamada discloses a liquid crystal device that is basically the same as that recited in claim 7 except for the liquid crystal material containing a surfactant.

JP'463 discloses that a surfactant is added into the liquid crystal to facilitate high-grade display without generating crosstalks (Abstract).

Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the liquid crystal device of Samant with the teaching of JP'463 by adding a surfactant into the liquid crystal material so as to facilitate high-grade display without generating crosstalks (Abstract).

7. Claims 25-27 and 43-45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamada et al. (Yamada, USPN 6,327,016 B1).

Yamada discloses a liquid crystal device that is basically the same as that recited in claims 25-27 and 43-45 except for alignment posts having a round cross section or a triangular cross section or an oval cross section. However, it would have been obvious to have a round cross section or a triangular cross section or an oval cross section for the alignment posts since such a modification would have involved a mere change in the shape of said alignment posts. Furthermore, a change in shape is generally recognized as being within the level of ordinary skill in the art (In re Dailey, 357 F.2d 669, 149 USPQ 47 (CCPA 1966)).

8. Claims 5, 6, 37 and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamada et al. (Yamada, USPN 6,327,016 B1) in view of Funada et al. (Funada, USPN 4,232,947).

Yamada discloses a liquid crystal device that is basically the same as that recited in claims 5, 6, 37 and 38 except for said posts being spaced from about 0.1 to 5 micrometer apart from each other and each post having a width in the range of about 0.2 to 3 micrometer.

As shown in Fig. 4, Funada discloses a structure consisting of a multiplicity of micro-grooves or strips (Applicant's alignment posts) for the purpose of regulating or defining the alignment of the liquid crystal molecules (see also Fig. 5(d) and col. 2, lines 61-68),

wherein, re claims 6 and 38, these alignment posts are spaced about "Alpha =10,000 Angstroms" (or 1 micrometer) (col. 3, lines 1-16).



Accordingly, re claims 5 and 37, each post also has a width of about 1 micrometer since each post has substantially symmetrical shape (col. 3, lines 1-7).

Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the liquid crystal device of Yamada with the teaching of Funada by forming alignment posts spaced apart about 1 micrometer and each having a width of about 1 micrometer so as to provide a much higher degree of uniformity in visual indication in a relatively wide range of observation angles (col. 1, lines 27-31).

### ***Response to Arguments***

9. Applicant's arguments filed November 25, 2005 have been fully considered but they are not persuasive.

Applicant argued that Yamada does not disclose a liquid crystal device having "a surface alignment structure on the inner surface of at least said first cell wall providing a single desired uniform alignment to a liquid crystal director"; in contrast, the claimed invention provides a surface alignment structure that provides a single desired uniform alignment, where the liquid crystal molecules are oriented in the same direction over an area of the display in which the surface alignment is provided. The Examiner disagrees with Applicant's remarks since, as shown in Fig. 3, Yamada discloses a liquid crystal device having a surface alignment structure 11 (protrusion-like structure) formed on the inner surface of the first substrate 10, wherein the liquid crystal molecules 13 are oriented in the same direction over an area 11a (side wall) of the display in which the surface alignment structure 11 is provided. Thus, Yamada also provides a similar

surface alignment structure that provides a single desired uniform alignment as defined by Applicant.

Applicant also argued that JP 5-249463 (JP'463) and US 4,232,947 to Funada et al. (Funada) do not disclose a liquid crystal device having "a surface alignment structure on the inner surface of at least said first cell wall providing a single desired uniform alignment to a liquid crystal director." However, it is obvious to employ JP'463 for teaching a surfactant which is added into the liquid crystal material in order to facilitate high-grade display without generating crosstalks (see Abstract), and Funada for teaching forming alignment posts spaced apart about 1 micrometer and each having a width of about 1 micrometer in order to provide a much higher degree of uniformity in visual indication in a relatively wide range of observation angle (col. 1, lines 27-31).

### ***Conclusion***

10. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

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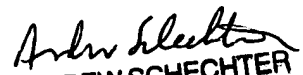
11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thoi V. Duong whose telephone number is (571) 272-2292. The examiner can normally be reached on Monday-Friday from 8:30 am to 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Kim, can be reached at (571) 272-2293.

Thoi Duong



02/16/2006

  
ANDREW SCHECHTER  
PRIMARY EXAMINER